# A False Bargain: The Los Angeles County Economic Consequences of Counterfeit Products



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#### **EXECUTIVE SUMMARY**

Counterfeiting is not taken seriously as a criminal activity, perhaps because sharing copied music or buying an imitation handbag doesn't feel like stealing to most people. On the contrary, to many it feels like a bargain: consumers often get a product almost as good (and in some cases indistinguishable from) the original for less money. Some pirated goods, however, pose health and safety risks. Counterfeit goods also impose long-term costs, since consumers will lose out when companies scale back their investment in research and development, whether developing new drugs or new music acts. More immediately, piracy causes real losses measurable in revenues, jobs, wages, and taxes.

### ➤ Global piracy cost the L.A. County firms that make the originals \$5.2 billion in 2005.

Global piracy disproportionately hurts Los Angeles because so many of the firms that make the originals are concentrated here. Hollywood movie studios, for example, lose out whether a copied DVD is sold in Los Angeles, Dallas, Athens or Shanghai. The LAEDC estimates that firms making products prone to counterfeiting in nine at-risk sectors suffered combined losses of \$5.2 billion in 2005. Motion picture production accounted for the largest share of the losses (\$2.7 billion), followed by sound recording (\$851 million); apparel, accessories and footwear (\$617 million); and software publishing (\$355 million). These figures represent the losses to firms based in Los Angeles, without specifying where the piracy takes place; i.e., L.A.'s losses to global piracy.

## > The black market in pirated goods diverted \$2 billion from the legitimate retail sector in Los Angeles.

Los Angeles is also home to a thriving black market in pirated goods. Three methods – (1) the "5 to 7 percent of trade" rule; (2) government and business surveys; and (3) customs seizures – suggest the market in counterfeit goods in L.A. County is between \$1.0 and \$17.4 billion annually. We conservatively estimate at least **\$2 billion** changed hands for counterfeit goods in L.A. County in 2005. This is the amount of money paid for pirated goods in the county, regardless of the origin of the fake or of the original. The money spent in the L.A. black market for pirated goods represents a substantial loss to the legitimate retail sector: \$2 billion is equivalent to the average annual sales of about 39 Wal-Marts, 49 Home Depots, or 54 Target stores.

There is some overlap between the \$5.2 billion loss suffered by producer firms and the \$2 billion loss to the retail sector, since copies of products made and sold here contribute to both figures. For example, the \$5.2 billion loss to L.A. producer firms includes locally based Disney's losses on pirated DVDs sold worldwide. Some fraction of the pirated Disney DVDs was sold in L.A., and contributed to the \$2 billion retail loss. The related job, wage and tax losses presented below were calculated separately to minimize this potential double counting.

### > Piracy cost L.A. County about 106,000 jobs with wages of \$5.1 billion in 2005.

The people who produce the legitimate items are hurt whenever sales lost to pirated goods translate into fewer jobs. Lower spending, in turn, hurts people throughout the local economy. No one worries about counterfeit lattes or haircuts, for example, but fewer workers in the sporting goods and motion picture industries will translate into fewer customers for restaurants and beauty care providers. There are approximately **70,000 direct and indirect jobs** missing from the L.A. economy because of lower revenues at firms producing piracy-prone goods. For comparison, this is roughly equivalent to all grocery store workers in the county. There are another **36,000 direct and indirect jobs** missing from the L.A. economy because the black market for pirated goods diverted \$2 billion from the legitimate retail sector in L.A. during 2005. For comparison, the same number of jobs would be lost if the entire aircraft equipment and parts manufacturing sector closed shop and left Los Angeles.

## ➤ Losses to L.A. County firms and the local retail sector deprived state and local governments of *at least* \$483 million in tax revenue in 2005.

State and local governments lose three times from piracy. First, they lose the sales taxes that should have been paid on the copied items. Next, they lose additional taxes when lost business revenues translate into lower spending and fewer jobs. And third, they bear the increased police, court, and prison costs associated with combating counterfeiting and related criminal activity.

- ➤ The State of California lost \$407 million, including \$213 million in lost state income taxes, and \$194 million in sales taxes.
- ➤ The Los Angeles County government lost **\$40 million** in sales tax revenue, including the Metropolitan Transportation Authority share.
- ➤ The City of Los Angeles lost \$17 million, including \$13.7 million in sales taxes and \$3.4 million in city business taxes.
- ➤ The other cities in Los Angeles County lost a combined \$19 million in sales tax revenues.

The government losses cited above are a serious understatement of piracy's burden on state and local governments. First, we have estimated only state income taxes, sales taxes, and City of Los Angeles business taxes. We have omitted business taxes in other cities, and state taxes such as unemployment insurance and corporate profit taxes. Second, we have not included the enforcement, prosecution, and punishment costs related to piracy.

#### ➤ The potential for additional damage to the L.A. economy is enormous.

The nine sectors in L.A. that are vulnerable to piracy sustain 1.1 million direct and indirect jobs representing about one-quarter of total employment in the county.

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#### INTRODUCTION

Counterfeit goods are sold every day in Los Angeles. Sometimes the piracy is blatant. Curbside vendors sell DVDs of movies that have only just opened in theaters. CDs of pirated music can be found at swap meets. Copies of expensive designer purses and other fashion accessories are on sale in Santee Alley. But at other times the fakes are harder to spot. Imitation products – from "authentic" sports team jerseys to car parts to pharmaceuticals – can be virtually indistinguishable from the real thing. And sometimes the piracy is hidden in plain view: an iPod may hold thousands of illegally downloaded songs. Something that is easy to find, however, is not necessarily easy to measure.

In this study, we tackle three interrelated questions about counterfeit goods. First, we consider the question of harm: *Who is hurt when a product is counterfeited?* We consider this question in the abstract in Part I.

In Part II, we ask: *How much did the Los Angeles economy lose to counterfeiting in 2005?* We focus on nine core sectors of the Los Angeles County economy where piracy is a recognized (and sometimes pervasive) problem. For each sector, we use the best available estimates of revenue losses and calculate the number of jobs and the amount of wages and taxes that are associated with those revenues. Ironically, the very strength of these sectors makes the L.A. economy particularly vulnerable to national and worldwide losses from counterfeiting. Piracy in the film industry, for example, disproportionately hurts Los Angeles – no matter where the copies are sold – because the firms that make the originals are concentrated here.

Next, in Part III, we turn to the issue of market size: What was the value of fake and copied goods sold in Los Angeles County in 2005? This is another way of asking: "How much money changed hands for fakes in LA County?" The trade in counterfeit goods, being illegal, takes place beyond the purview of the official economy. There are no government records cataloging the number or the value of the transactions involved, making an accurate assessment of the size of the market in fake goods all but impossible. We use three different methods to estimate a range for the street value of fake goods purchased in Los Angeles County, then use several "tests of reasonableness" to narrow the range.

#### PART I – WHERE IS THE HARM?

Trade in counterfeit goods hurts the owners of the original products that are illegally copied. It also hurts workers, the government, and consumers themselves. We consider the harm to each in turn.

#### Findings:

- > Piracy hurts the owners of the intellectual property being copied.
- ➤ Direct workers the people in the affected industries lose when lower business revenues translate into fewer jobs.
- ➤ Indirect workers the people whose jobs depend on the spending of the direct workers and the affected companies also lose.
- Consumers lose when pirated products pose a health or safety risk and when companies scale back their investment in research and development.
- > State and local governments lose three times: first, they lose the sales taxes that should have been paid on the copied item; next they lose additional taxes when lost business revenues translate into lower spending and fewer jobs; and third, they bear the increased police, court, and prison costs associated with combating counterfeiting and related criminal activity.

Owners of Intellectual Property: The obvious losers from counterfeiting are the individual creators and companies whose goods have been illegally copied. Companies are forced to compete with versions of their own product, made by an illegal competitor who can substantially undercut the price because he bore none of the research and development costs or risks. The result is lost sales and lower returns on investments in research and development. Fakes can also cost companies goodwill (and squander billions in advertising and brand development) if disappointed consumers mistakenly purchase an inferior product in the belief that it was the genuine article. Companies also must bear the increased costs – for encryption technology, legal services, etc. – associated with protecting their intellectual property.

**Workers**: Corporate losses due to competition from counterfeit products cost workers in legitimate industries their jobs. The losses are twofold. First, there are the direct workers in the affected industry. Fewer workers are needed to produce the legitimate product. Even if physically reproducing the goods is not labor intensive, as in the case of digital content, jobs will still be lost if companies respond to lower revenues because of piracy by reducing their investment in research and product development. One Los Angelesbased company, for example, closed an entire division because pirated CDs accounted for 85 percent of the market in that segment. Second, there are the indirect workers whose jobs are supported by the spending of the direct workers. Lower spending by direct

workers will mean fewer jobs at coffee shops, grocery stores, car dealers, lawn care services, etc.

Consumers: Superficially, consumers appear to benefit from piracy: they get the same (or similar) products for less money. Yet, counterfeiting also harms consumers. First, consumers suffer directly when counterfeit goods are a health or safety hazard. Fake airplane parts may or may not hold up under stress; fake brake pads may or may not stop the vehicle reliably; counterfeit drugs may or may not contain the correct active ingredients; shoddily constructed electrical goods may or may not meet federal safety standards. Pirated goods can be hazardous. Second, consumers suffer an indirect form of harm when companies respond to piracy by investing less in research and development. Consumers lose out when fewer innovative products reach the market.

**State, local, and national governments**: Governments suffer three forms of harm from counterfeiting. First, there is the lost tax revenue. Most fake products are bought in the black market where the transactions go unrecorded and untaxed. Even when fake products infiltrate the supply chains of the legitimate economy, they can still reduce tax revenue if they displace legitimate goods that would have sold at a higher price. Governments also lose tax revenue – income tax, sales tax, payroll taxes, etc. – when workers are laid off by firms that face competition from fakes.

Second, governments have to spend money on the enforcement of intellectual property. This includes paying for the police who investigate piracy; the court time to prosecute counterfeiters; and the jail space to house convicted counterfeiters.

Third, governments have to be concerned about the groups attracted to counterfeiting. Counterfeiters can earn more money, with lower risk of capture and lighter sentences if they are prosecuted, than bank robbers. This state of affairs has attracted organized crime and even terrorists to counterfeiting. <sup>1</sup> The L.A.P.D. has responded with the creation of a dedicated anti-counterfeiting unit. [See Appendix A for more information.]

<sup>&</sup>lt;sup>1</sup> "The Links Between Intellectual Property Crime and Terrorist Financing," testimony of Ronald K. Noble, secretary general of Interpol, to House Committee on International Relations, Washington, DC, 108<sup>th</sup> Congress, July 16, 2003; Mathew Benjamin, "A World of Fakes," *US News and World Report*, July 14, 2003.

#### PART II – THE ECONOMIC CONSEQUENCES OF REVENUES LOST TO PIRACY

#### Key Findings:

- ➤ National and global piracy disproportionately hurts Los Angeles because the firms that make the originals are concentrated here.
- L.A. County firms lost an estimated \$5.2 billion to piracy in 2005.
- Motion picture production (\$2.7 billion) accounted for roughly half the losses, followed by sound recording (\$851 million); apparel, accessories and footwear (\$617 million); and software publishing (\$355 million).
- ➤ The lost revenue cost the City of L.A. \$2.7 million in city business taxes.
- Recapturing the lost revenue would create 70,300 jobs in L.A. County, with wages of \$3.8 billion. These workers would pay \$161 million in state income taxes and \$76.5 million in state sales taxes annually.

Measuring the losses due to counterfeit goods is fiendishly difficult. In this section, we first try and estimate the L.A. County share of global losses to piracy. Ironically, the very strength of the nine at-risk sectors in Los Angeles makes the local economy that much more vulnerable. Piracy in the film industry, for example, disproportionately hurts Los Angeles – no matter where they're sold – because the firms that make the originals are concentrated here. Once we've estimated the business revenue losses, we gauge the impact in lost (or foregone) jobs, wages, and tax revenues. For a survey of each of these industries, see Appendix D. Table 1 summarizes the revenue losses to piracy in at-risk sectors in Los Angeles.

Table 1 Losses Due to Counterfeiting in Los Angeles County, 2005 (Millions of Dollars)			
Sector	Lost Revenue		
MOTION PICTURE PRODUCTION	\$2,748		
SOUND RECORDING	\$851		
APPAREL, ACCESSORIES AND FOOTWEAR	\$617		
DOLL, TOY & GAMES	\$275		
AEROSPACE PARTS & EQUIPMENT MFG	\$89		
PHARMACEUTICAL & MEDICINE MFG	\$132		
MOTOR VEHICLE PARTS MANUFACTURING	\$38		
SOFTWARE PUBLISHING	\$355		
SPORTING & ATHLETIC GOODS	\$74		
L.A. COUNTY TOTAL*	\$5,179		

\*Total may not add due to Rounding Source: LAEDC

Digital content is particularly vulnerable to piracy because making and sharing (or selling) copies is easy and inexpensive. Firms lose sales to file sharing on the internet, illegal copies burned on writable DVDs and CDs, and sophisticated operations that produce pressed copies made with the same equipment the industry uses. Digital piracy is a severe problem for three of our selected sectors: Motion Pictures; Sound Recording and Related Industries; and Software Publishing. The problem is worldwide in scope and even here, in the entertainment industry's hometown, obviously pirated copies of movies and songs are available on the sidewalks and at swap meets. The source of the originals used to make the pirated copies can be surprising – some bootleg DVDs have been traced to members of the Academy of Motion Pictures, who had received copies of the movies for Oscar screening.

Motion Pictures: The losses to firms in the motion picture sector are very large. The MPAA commissioned a study that used phone and internet surveys and focus groups to estimate worldwide losses to piracy. The global motion picture industry, including foreign and domestic producers, distributors, theaters, video stores and pay-per-view operators lost \$18.2 billion in 2005 as a result of piracy. Hollywood studios accounted for \$6.1 billion of the losses: \$1.3 billion in the United States, almost \$2.4 billion in Europe, and another \$2.4 billion in the rest of the world. Our confidence in the \$6.1 billion figure is buttressed by the rapid growth in online movie piracy. Movies have heretofore enjoyed a degree of protection simply because the digital files are so large, but faster computers and internet connections are rapidly making this "protection" obsolete.<sup>2</sup>

The impact of the studios' losses to global piracy is concentrated in L.A., but is also felt anywhere else the studios spend money making movies. We are interested in the L.A. County impact. First, we reduced the industry's total estimated losses by 20 percent to reflect the global nature of MPAA members' spending on motion picture production. Then, we assumed L.A. County's share of the remaining losses is similar to its share of U.S. employment in motion picture production (56 percent). The result is an estimate of \$2.7 billion in losses in the L.A. County motion picture sector.

**Sound Recording:** The sound recording industry lost billions to piracy in 2005: sales of pirated music CDs were worth an estimated \$4.5 billion and there were about 20 billion illegal downloads. Valuing the losses to the industry is challenging because music buyers are price sensitive, but the \$4.5 billion estimate is based on the street—not retail—value of the CDs. This raises our confidence that the figure represents a real loss to the industry. [For more on what counts as a loss, see Appendix B.] Valuing the illegal downloads is trickier still, yet even a modest value of 10 cents per song suggests further industry losses of \$2 billion. Global sales (physical and digital) of music in 2005 were \$33.5 billion, with RIAA members (U.S. companies) accounting for about 37 percent of the sales. Assuming a proportionate share of the global losses suggest U.S. firms lost

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<sup>&</sup>lt;sup>2</sup> Juliana Koranteng, "Working for the Clampdown," *Hollywood Reporter*. July 11-17, 2006, pg 18; Geoffrey Fowler, "Estimates of Copyright Piracy Losses Vary Widely," *Wall Street Journal*, June 2, 2006; Motion Picture Association of America, www.mpaa.org.

\$2.4 billion to piracy in 2005. Using the county's share of national employment in the sound recording industry (36%) suggests losses to L.A. County of \$851 million.<sup>3</sup>

**Software:** The software industry lost more than \$31 billion to global piracy in 2005. The losses represent the retail value of all pirated packaged software that runs on personal computers. There is compelling evidence suggesting that the retail value is the loss to the industry. [An industry-sponsored study shows a strong relationship between reducing piracy and increasing industry revenues, based on analysis of the ratio of computer hardware sales to software sales in different countries after a drop in the level of counterfeiting.] U.S. software firms accounted for approximately 45 percent of all software sold by value, suggesting their share of the global loss was about \$13.9 billion.<sup>4</sup>

The Entertainment Software Association separately tracks losses to global piracy for computer and video games, and report a loss to the U.S. industry of \$3 billion in 2004 (the most recent year available). The credibility of the number is enhanced by the omission of losses to internet piracy, which if it were counted and included, would surely raise the estimated losses substantially. To avoid double counting the computer games included in the software industry estimate, we reduced the \$3 billion loss by 14 percent, the approximate share of computer games sales in the U.S. [The other 86 percent of sales are video (console) games.] Combining our loss estimates suggested U.S. firms lost \$16.4 billion to software pirates. With 2.2 percent of the U.S. software publishing industry by employment, we estimate the L.A. County software sector lost \$355 million.

**Aerospace Parts:** One would like to think that airlines use only genuine parts when maintaining their fleets, yet the Federal Aviation Administration estimates two percent of airplane parts installed each year (or roughly 520,000 parts) are counterfeit. Using that figure, we took two percent of the \$4.4 billion aerospace parts and equipment manufacturing revenue in Los Angeles County, producing an estimated \$89 million loss in revenue for the industry. Many of the fake parts are visually indistinguishable from the real products, yet are of dramatically inferior quality – a characteristic shared with counterfeit products in the Motor Vehicle Parts Manufacturing sector.

**Automotive Parts:** According to the Federal Trade Commission, counterfeiting costs the global automotive parts industry \$12 billion a year; \$3 billion of that total is in the United States. It is unclear whether the \$3 billion in losses represents the dollars lost in the U.S. market or the share of losses to U.S. producers. Since about 25 percent of global automotive production takes place in the United States, either formulation would produce a similar estimate. With 1.3 percent of nationwide employment in the automotive parts industry, we estimate the Los Angeles County sector lost \$38 million.

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<sup>&</sup>lt;sup>3</sup> See www.ifpi.org for "The Recording Industry 2006 Piracy Report" and global sales statistics; RIAA.

<sup>&</sup>lt;sup>4</sup> Third Annual BSA and IDC Global Software Piracy Study, May 2006; Software and Information Industry Association.

<sup>&</sup>lt;sup>5</sup> Entertainment Software Association (www.theesa.com).

<sup>&</sup>lt;sup>6</sup> U.S. Chamber of Commerce, "Counterfeiting and Piracy" Fact Sheet

<sup>&</sup>lt;sup>7</sup> http://www.aftermarketsuppliers.org/issues/facts.php

**Apparel, Accessories & Footwear:** Counterfeiting is a major headache for the Apparel, Accessories and Footwear; Doll, Toy & Games; and Sporting & Athletic Goods sectors. Some of the fakes are low-price, obvious knockoffs of expensive designer products; others are deceptively similar to the real items. The counterfeiting in this sector takes place on a large scale. In a single raid this past summer, more than 135,000 fake Nike running shoes with a retail value of \$16 million were seized. \*\* Unfortunately, there is no industry specific data on the losses due to counterfeiting these products. Instead, the LAEDC conservatively estimates losses of 5 percent of total industry revenue in L.A. County for these sectors: \$617 million in the apparel, accessories and footwear sector; \$275 million for the doll, toy and games sector; and \$74 million in losses for the sporting and athletic goods sectors.

**Pharmaceuticals:** Another sector where counterfeiting is deeply unsettling is Pharmaceutical & Medicine Manufacturing. The World Health Organization (WHO) estimates that ten percent of all pharmaceuticals sold worldwide are fakes, with a much higher percentage in developing countries. In the U.S., drugs from mail-order and internet operations are particularly susceptible to fraud. However, much like the apparel sector, no industry-specific data is available to calculate the losses due to piracy. [The industry says it is more concerned with the health risks of counterfeit drugs.] In 2005, the pharmaceutical and medicine manufacturing industry had revenues of \$2.6 billion in Los Angeles County. Again, we took a conservative estimate of 5 percent of this figure to approximate the sector's loss in revenue, \$132 million.

Table 2, on the next page, shows the direct and indirect jobs, wages and taxes missing in L.A. County because of the losses described in Table 1. We used industry-specific RIMS II final demand multipliers to estimate the loss in total employment per million dollars of lost revenue. In the Apparel, Accessories and Footwear sector, for example, a loss of \$617 million in revenue would lead to lower expenditures by firms and employees. These changes would ripple through the economy, placing 9,200 jobs with total wages of \$353 million at risk, both in the sector itself and in supporting industries. The loss of these jobs and the associated wages and taxable spending would reduce state income tax collections by \$14.8 million and sales tax revenues in Los Angeles County by \$7 million. [These losses can be compared to the total revenue, jobs, wages, and taxes sustained by each industry in Appendix D.]

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<sup>&</sup>lt;sup>8</sup> BBC News. "US Smashes 'Fake Nike Smugglers'" August 7, 2006. <a href="http://news.bbc.co.uk/go/pr/fr/-/2/hi/americas/5322332.stm">http://news.bbc.co.uk/go/pr/fr/-/2/hi/americas/5322332.stm</a>

<sup>&</sup>lt;sup>9</sup> WHO estimates 16% of counterfeit drugs contain the wrong ingredients, 17% contain incorrect amounts of the proper ingredients and 60% have no active ingredients whatsoever. Phillippe Broussard, "Dangerous Fakes," *World Press Review*, v44, n1, p36 (1) (January 1999); and Douglas Pasternak, "Knockoffs on the Pharmacy Shelf, Counterfeit Drugs are Coming to America," *US News & World Report*, June 11, 2001.

## Table 2 How Revenue Lost to Counterfeiting Translates into Lost Jobs, Wages, and Taxes in Los Angeles County (Millions of Dollars and Number of Jobs)

	Losses to Counterfeiting					
Sector	Revenue	Total Jobs	Total Wages	State Income Taxes	Sales Taxes	L.A. City Business Taxes
MOTION PICTURE PRODUCTION	\$2,748	45,100	\$2,600	\$110.0	\$52.1	\$0.32
SOUND RECORDING	\$851	6,400	\$352	\$14.8	\$7.0	\$1.64
APPAREL, ACCESSORIES AND FOOTWEAR	\$617	9,200	\$353	\$14.8	\$7.0	\$0.44
DOLL, TOY & GAMES	\$275	2,800	\$163	\$6.9	\$3.2	\$0.05
AEROSPACE PARTS & EQUIPMENT MFG	\$89	900	\$46	\$1.9	\$0.9	\$0.04
PHARMACEUTICAL & MEDICINE MFG	\$132	800	\$39	\$1.6	\$0.8	\$0.02
MOTOR VEHICLE PARTS MANUFACTURING	\$38	400	\$15	\$0.6	\$0.3	\$0.02
SOFTWARE PUBLISHING	\$355	3,700	\$219	\$9.2	\$4.4	\$0.12
SPORTING & ATHLETIC GOODS	\$74	800	\$37	\$1.6	\$0.7	\$0.03
L.A. COUNTY TOTAL *	\$5,179	70,300	\$3,845	\$161	\$76.5	\$2.68

<sup>\*</sup>Totals may not add due to rounding

Source: LAEDC

The nine at-risk sectors of the L.A. economy suffered estimated revenue losses of \$5.2 billion to piracy in 2005. Losses in the motion picture production industry alone constituted over half of this total, with \$2.7 billion in lost revenue. After the multiplier effect, the lost industry revenues cost the county 70,300 jobs. These workers would have received an estimated \$3.8 billion in wages in 2005. Furthermore, the loss of the industries' revenue resulted in the estimated loss of over \$161 million in state income taxes and \$76.5 million in sales taxes.

The City of Los Angeles lost \$2.68 million in city business tax as a result of revenues lost to piracy. This estimate is based on the city share of employment in each sector (see Appendix C) and the prevailing business tax rates. <sup>10</sup> The actual tax losses to the city and county were higher than reported here because of the many taxes we have not measured. Lower revenues translate into less spending in the county and fewer jobs. Fewer jobs also mean less spending. Overall lower spending will lead to fewer dollars collected from parking taxes, utility taxes, transient occupancy taxes, fuel taxes, etc.

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<sup>&</sup>lt;sup>10</sup> The losses were slightly higher than reported. We used \$1.09 per \$1,000 in revenues for the entire apparel, accessories and footwear sector. Some of the subcontractors in the sector pay a higher rate of \$3.85 per \$1,000 of revenue.

#### PART III - HOW MUCH WAS SPENT ON COUNTERFEIT GOODS IN L.A. COUNTY?

In the previous section, we estimated that Los Angeles firms in sectors vulnerable to piracy lost about \$5.2 billion to global piracy in 2005. Here we estimate the dollars changing hands for counterfeit goods in Los Angeles County.

#### Key Findings:

- ➤ Three methods (1) the "5 to 7 percent of trade" rule; (2) government and business surveys; and (3) customs seizures suggest the market in counterfeit goods in L.A. County is between \$1.0 and \$17.4 billion annually.
- All three methods have their flaws, so we apply "tests of reasonableness" to narrow the range.
- At \$5 billion equivalent to 550,000 transactions daily worth \$25 each the black market would be 1/12<sup>th</sup> the size of the legitimate retail market (minus automotive sales), too large to be credible. Higher estimates are even less plausible.
- Any estimate under \$2 billion seems unreasonably small: the lowest figure produced by the most conservative method, based on customs seizures, is \$1 billion and does not include the extensive contribution of locally pirated goods.
- ➤ We conservatively estimate at least \$2 billion changed hands for counterfeit goods in L.A. County in 2005.
- ➤ If sales in this black market were redirected to the legitimate retail sector, it would add 36,000 direct and indirect jobs with \$1.2 billion in wages. The job holders would pay \$52 million in state income taxes. Their taxable spending, plus the taxes that should have been captured on the \$2 billion in illicit transactions would generate \$190 million in sales taxes. Directing the \$2 billion in spending to the legitimate retail sector would generate \$680,000 in business taxes for the City of L.A.

Piracy is illegal, so its purveyors tend to avoid government surveys. Thus, the Quarterly Census of Employment and Wages from the California Employment Development Department does not cover counterfeiters. There is no entry for piracy in County Business Patterns, an annual series from the U.S. Census that provides state and local economic data by industry. And the 2002 Economic Census is silent on the annual revenue derived from selling fake or copied goods. Police raids and customs seizures of counterfeit goods provide our only glimpse into this underground economy.

There is very little reliable data on the extent of counterfeiting operations, the number of people involved, the total value of the goods sold, and the cost to the firms whose products were copied. The data that is reliable is fragmented and incomplete. With so

much about the industry inherently unknowable, a precise accounting of the dollars involved is impossible. Instead, we use a variety of approaches simultaneously.

In the next three sections, we measure the dollar value of counterfeit goods in Los Angeles County three different ways. The first section applies a generally accepted rule of thumb to imported goods; the second is based on federal and industry surveys; and the third extrapolates the total value of counterfeit goods based on seizures by U.S. Customs. In the fourth section, we discuss the relative merits of these measures. Our goal is to produce an order-of-magnitude picture of the dollars changing hands for pirated goods in Los Angeles County.

Method #1: The "5 to 7 Percent of Trade" Rule

ICC Commercial Crime Services, the anti-crime arm of the International Chamber of Commerce, estimates that 5 to 7 percent of all world trade is in counterfeit goods. <sup>11</sup> In the absence of survey data, this estimated range has become the standard measure of counterfeiting. Commenting on the dearth of useful data, the Organisation for Economic Co-operation and Development reports:

"it is virtually impossible to find accurate statistics...not least because of the clandestine nature of the activity. The overall costs of counterfeiting in the world today are normally estimated to be 5-7 per cent of world trade. There is no substantial aggregated data to support the high percentages, but the figures are now accepted and used to illustrate the extent of the counterfeiting problem." 12

Table 3 reports the estimated value of counterfeit goods in 2005 based on a five to seven percent share of global merchandise trade.

Table 3 Estimated Value of Counterfeit Goods as a Share of Global Merchandise Trade, 2005 (Billions of Dollars)						
Value of Counterfeit Goods						
	5% 7%					
Global Merchandise Trade	\$10,159	\$508	\$711			
Total U.S. Merchandise Trade	\$2,572	\$129	\$180			
U.S. Merchandise Imports Only	\$1,677	\$84	\$117			
L.A. Customs District Imports	\$216	\$11	\$15			
Destined for L.A. County \$70 \$3 \$5						

Sources: WTO; US Census Bureau; International Chamber of Commerce; LAEDC.

<sup>&</sup>lt;sup>11</sup> International Chamber of Commerce, ICC Commercial Crime Services, "A Brief Overview of Counterfeiting," <a href="https://www.iccwbo.org/ccs/cib\_bureau/overview.asp">www.iccwbo.org/ccs/cib\_bureau/overview.asp</a>.

<sup>&</sup>lt;sup>12</sup> OECD, The Economic Impact of Counterfeiting, 1998, p. 23.

Global international merchandise trade was \$10.1 trillion in 2005. Applying the 5 to 7 percent of trade rule suggests a worldwide value of traded counterfeit goods ranging from \$508 billion to \$711 billion. The First Global Conference on Combating Counterfeiting estimate of global losses to counterfeiting in 2004 – \$650 billion – falls within this range. 13 The United States accounted for \$2.6 trillion in merchandise trade, 25 percent of the global total, suggesting \$129 billion to \$180 billion nationally in counterfeit goods. These figures include imports and exports.

The U.S. is unlikely to be a large source of exported counterfeit goods, at least not those counted in merchandise trade statistics. Counterfeit goods that are produced in the U.S. are mostly sold here; those that are exported are more likely to be electronic copies of digital content. Applying the rule of thumb to just the \$1.7 trillion in U.S. merchandise imports suggests counterfeit goods entering the United States are worth \$84 billion to \$117 billion.

Imports coming through the Los Angeles Customs District were \$216 billion in 2005 (12.8 percent of the national total), suggesting counterfeit goods worth \$11 billion to \$15 billion entered the country through the region's ports and airports.

The LAEDC estimates \$70 billion of goods arriving at the Los Angeles Customs District are used as inputs by firms or consumed by households in Los Angeles County. By value, 82.5 percent of the goods arrive in the Customs District by ship; 17.2 percent arrive by air. Roughly half of the goods arriving by ship are destined for use in Southern California; almost all of the goods arriving by air are consumed in Southern California. [McCarran Airport in Las Vegas is part of the Los Angeles Customs District.] Los Angeles County's contribution to GDP was \$424 billion, 56 percent of the 5-county, Southern California total (\$755 billion).

**Result:** Based on \$70 billion in imports, applying the 5 to 7 percent of trade rule suggests the value of counterfeit goods in L.A. County lies between \$3.5 billion and \$4.9 billion. The associated tax loss to state and local governments would be up to \$606 million.

#### Method #2: Business and Government Surveys

In another widely cited study, the New York City Comptroller's Office started with an estimate of the total dollar exchange of counterfeit goods in the U.S., and then estimated values for New York City and the rest of New York based on an adjusted share of GDP. 14 The starting point for the study was a 1996 article in Fortune that noted "federal and industry surveys indicate that America's annual losses from [counterfeiting] have quadrupled over the past decade to a staggering \$200 billion." The *Fortune* article does

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<sup>&</sup>lt;sup>13</sup> First Global Conference on Combating Counterfeiting, May 25-26, 2004, www.anticounterfeitcongress.org.

<sup>&</sup>lt;sup>14</sup> New York City Comptroller's Office, "Bootleg Billions: The Impact of the Counterfeit Goods Trade on New York City," November 2004.

15 David Stipp, "Farewell, My Logo," *Fortune*, May 27, 1996.

not provide a source, though it was likely based on testimony given at hearings held by the Senate Judiciary Committee. Adjusted for inflation, \$200 billion in 1995 is equivalent to \$256 billion in 2005 dollars. This estimate is in line with other industry-reported estimates of losses of \$250 billion from counterfeiting. Table 4 estimates the national market in counterfeit goods and estimates the California and L.A. share based on their contributions to national GDP.

Table 4 Estimated Value of Counterfeit Goods Based on Industry and Government Surveys and Share of GDP, 2005 (Billions of Dollars)				
GDP Share of U.S. Counterfeit GDP Goods				
United States	\$12,456	100.0%	\$256	
California	\$1,622	13.0%	\$33	
L.A. County	\$424	3.4%	\$9	

Sources: Bureau of Economic Analysis; LAEDC.

U.S. gross domestic product was \$12.5 trillion in 2005. California's gross state product the same year was \$1.6 trillion, 13.0 percent of the national total. Los Angeles County contributed \$424 billion in economic activity, representing 3.4 percent of U.S. GDP.

**Result:** Based on share of GDP, the Los Angeles County market for counterfeit goods was \$8.7 billion. The associated tax loss to state and local governments would be \$1.1 billion

The NYC Comptroller's Office study used twice the city's share of national GDP, based on the assertion that NYC accounts for a disproportionate share of counterfeiting. The reasons given make sense—a high volume of imports; large seizures of counterfeit CDs; and the presence of large numbers of tourists and short term residents—or are inconclusive. The core assumption—that the combination of easy access and a large market contribute to a disproportionate share of counterfeiting—appears sound and applies equally well to Los Angeles County.

**Result:** Using twice Los Angeles County's share of GDP would double our estimate of the market in counterfeit goods to \$17.4 billion. The associated tax loss to state and local governments would be \$2.1 billion.

<sup>&</sup>lt;sup>16</sup> See Senate Report 104-177 – Anticounterfeiting Consumer Protection Act of 1995, 104<sup>th</sup> Congress, 1<sup>st</sup> Session, 1-2 (1995).

<sup>&</sup>lt;sup>17</sup> Figure adjusted based on changes in the Consumer Price Index. The methodology for the adjustment to \$287 billion in the NYC Comptroller's Office study is not explained.

<sup>&</sup>lt;sup>18</sup> See, for example, <a href="http://www.uspto.gov/smallbusiness/about/">http://www.uspto.gov/smallbusiness/about/</a>.

#### Method #3: Customs Seizures

The most concrete data on counterfeiting come from periodic police and customs seizures of pirated goods. These seizures capture only a fraction of the total market, but they provide an accurate starting point from which to extrapolate. Agents from U.S. Customs and Border Protection seized \$139 million in counterfeit goods in 7,255 seizures during 2004. In Table 5 we use the value of seized goods to estimate the overall volume of counterfeit goods. The key variable is the rate at which U.S. Customs and Border Protection agents interdict the illegal goods.

Table 5 Estimated Value of Counterfeit Goods Based on Success Rate of U.S. Customs and Border Protection Seizures, 2004 (Percentage Rate and Billions of Dollars)					
U.S. Customs Assumed Interdiction Rate (%)	10.0	5.0	1.0	0.2	0.1
Implied Value of Counterfeit Goods Entering the U.S.	\$1.4	\$2.8	\$13.8	\$69.1	\$138.1

Source: U.S. Department of Commerce; LAEDC.

If the agents successfully intercept 10 percent of all shipments of pirated goods, then the value of all imported counterfeits was \$1.4 billion in 2004. If they interdict 5 percent of the shipments, the market in fakes and copies was closer to \$3 billion. For comparison, the Recording Industry Association of American assumes that law enforcement in Los Angeles County seizes 5.1 percent of counterfeit music on CD-Rs and 6.3 percent of pirate, pressed CDs produced each year.

Yet, spotting the fake goods in a \$1.7 trillion flood of imports is a challenging task. A single large ship carries more than 4,000 containers. At the Ports of Los Angeles and Long Beach, agents will screen 8.2 million loaded containers this year – more than 22,000 a day, every day, 365 days per year. And the pirated goods *are designed to be mistaken for the real thing*. While the quality of the reproductions varies tremendously, some fakes can be hard to spot, even for experts.

If Customs and Border Protection agents spot 1 shipment of fakes in a 100--1 in 500--or 1 in 1000, then our estimate of the value of counterfeit imports rises to \$13.8 billion, \$69.1 billion, or \$138.1 billion, respectively. The actual rate of successful interdiction is unknowable, though there is some agreement that it is likely *at most* 1 percent. This suggests that at least \$13.8 billion in counterfeit goods entered the U.S. in 2004. In Table 6, on the next page, we estimate the L.A. County share using three different approaches.

<sup>19</sup> http://www.cbp.gov/xp/cgov/import/commercial\_enforcement/ipr/seizure/seizure\_stats.xml

<sup>&</sup>lt;sup>20</sup> See for example, Linda Punch, "Bogus Brand and the Internet," *Internet Retailer*, August 2005; and written testimony of Professor Daniel C.K. Chow to the hearing of the U.S. Senate Committee on Homeland Security and Governmental, "Pirates of the 21<sup>st</sup> Century: The Curse of the Black Market," April 20, 2004.

## Table 6 L.A. County Share of Estimated U.S. Imports of Counterfeit Goods Based on Successful U.S. Customs Seizures (Percentage Rate and Billions of Dollars)

	L.A. Share	Counterfeit Goods		
Allocation Method	of U.S. Total	Based on 1 in 100	Based on 1 in 500	
GDP	3.4%	\$0.5	\$2.3	
Merchandise Imports	12.8%	\$1.8	\$8.8	
Containerized Cargo Imports	43.0%	\$5.9	\$29.7	

Sources: Congressional Budget Office; Bureau of Economic Analysis; LAEDC.

The county share of national gross domestic product is 3.4%, suggesting counterfeit goods in L.A. worth \$0.5 billion to \$2.3 billion. Using the L.A. Customs District share of all U.S. merchandise imports (12.8%), suggests counterfeit goods worth \$1.8 billion to \$8.8 billion. Based on the San Pedro Bay ports' share of all U.S. containerized cargo imports (43.0%), imported counterfeit goods in L.A. are worth \$5.9 to \$29.7 billion.

Since we are attempting to estimate *consumption* of goods in Los Angeles County, using the share of GDP makes the most sense. [Southern California is a the nation's gateway to the Pacific Rim, and much of the trade entering through the San Pedro Bay ports is destined for elsewhere in the U.S.] We use double the share of L.A. County's contribution to GDP following the same logic described in method #2, above.

**Result:** The estimated range of imported counterfeit goods in L.A. County is \$1.0 billion to \$4.6 billion. The associated tax loss to state and local governments would range from \$121 million to \$606 million.

*Methods #1 to #3: Summary* 

Precisely measuring the size of the black market is, by definition, impossible. The difficulty is reflected in our results, which are summarized in Table 7.

Table 7 Estimated Value of Counterfeit Goods In L.A. County, 2005 (Billions of Dollars)			
Estimation Method Value of Counterfeit Goods In Los Angeles County			
#1 5 to 7 I	Percent of Trade Rule	\$3.5 to \$4.9	
#2 Govt. 8	& Business Surveys	\$8.7 to \$17.4	
#3 Custom	ns Seizures	\$1.0 to \$4.6	

Sources: Bureau of Economic Analysis; LAEDC.

We used three different approaches to gauge the value of counterfeit goods in Los Angeles County, producing estimates ranging from \$1.0 billion all the way up to \$17.4 billion. Here we consider the relative merits of the different methods.

**Method #1** has several drawbacks. First, the value of counterfeit goods is estimated based on the value of merchandise trade. We narrowed the focus to just imports, an improvement that still leaves us starting with a figure that is much too high. Imported goods include items that are rarely or never counterfeited, particularly in the break-bulk and roll-on, roll-off cargo categories. For example, new motor vehicles (\$27.3 billion) and raw fuel (\$11.5 billion) were ranked 2<sup>nd</sup> and 5<sup>th</sup> by value, respectively, among all product groups imported via the L.A. Customs District in 2005. Starting with a number that is too large will produce estimates for Los Angeles that are too high. On the other hand, none of the previous studies that cite the 5 to 7 percent rule specify whether it applies to *all* international trade, or merely to trade *likely to be counterfeited*. If it is the former, then our estimate is too low.

Second, we have implicitly assumed that counterfeit goods arriving in the United States are uniformly distributed among all ports of entry. Yet, a disproportionate share of counterfeit goods originate in Asia—particularly China—and West Coast ports—particularly Los Angeles and Long Beach—handle a disproportionate share of U.S. imports from Asia. This combination suggests that imported counterfeit goods may be more prevalent in L.A. County, in which case our estimated range is too low.

Third, focusing on *imported* counterfeits ignores *domestic* fakes. Adding the value of Made-in-the-USA pirated products would also raise the estimate, perhaps substantially.

Fourth, and most important, the method succeeds or fails on the validity of assumption that counterfeit goods account for 5 to 7 percent of international trade. Despite its widespread use, there is no easy way to confirm or disprove this hypothesis.

Method #2 is based on industry and government surveys of losses due to counterfeiting. This creates a built-in upward bias, since larger reported losses are more likely to spur government anti-counterfeiting action. Moreover, the definition of "losses" is never discussed. Are the losses based on dollars changing hands for illegitimate goods in the black market or on the retail value of the copied goods? How many of the counterfeit goods really represent lost sales? [See Appendix B for more on this issue.] And in contrast to methods #1 and #3, which neglect domestic counterfeiting, this approach may include overseas losses of U.S. companies. The top end of this estimated range may be too high.

**Method #3** starts with rock-solid data: the value of copied and pirated goods seized by U.S. Customs and Border Protection agents. Uncertainty enters the equation when we must estimate the percentage of all counterfeit goods interdicted; a low success rate (and larger estimate of the value of fakes) seems the most plausible. Moreover, the estimates are too low because they do not include counterfeit goods produced in the U.S.

How plausible are these estimates?

With such a wide range of values, we need some means of testing the reliability of the estimates. Here we apply several "tests of reasonableness" to try and narrow the range.

We start by comparing the estimates for the market in fakes to the legitimate retail market in Los Angeles. The money changing hands for counterfeit goods is money that would have been spent on retail purchases if there were no black market. Table 8, shows the value of taxable retail sales in Los Angeles County in 2005.

Table 8 Los Angeles County Taxable Retail Sales, 2005 (Millions of Dollars)	
Taxable Retail Sales, Total	\$92,271
Taxable Retail Sales, Less Automotive Group*	\$64,964

<sup>\*</sup>Less new and used auto dealers and service stations; auto parts dealers still included. Sources: California Board of Equalization

Total taxable retail sales in Los Angeles County in 2005 were \$92.3 billion, \$28.5 billion of which was spent at new and used auto dealers, service stations (including fuel), and auto parts dealers. Leaving in the auto parts dealers (an industry subject to counterfeiting) but removing the rest of the automotive group (which is not), taxable sales in L.A. County were \$65.0 billion.

In Table 9, we compare the estimated ranges for counterfeit goods sold in the county with the actual taxable retail sales minus the automotive group (except parts).

Table 9 Estimated Value of Counterfeit Goods as a Percentage of \$65 Billion In Taxable Retail Sales* In L.A. County, 2005 (Billions of Dollars)				
Estimation Method Value of Counterfeit Goods In L.A. County Percentage				
#1 Rule of Thumb \$3.5 to \$4.9 5.4% to 7.5%				
#2 Govt. & Business Surveys \$8.7 to \$17.4 13.4% to 26.8%				
#3 Customs Seizures	\$1.0 to \$4.6	1.5% to 7.1%		

<sup>\*</sup>L.A. County total, less sales in the automotive group (except parts). Sources: Bureau of Economic Analysis; LAEDC.

The estimated range of dollars changing hands for counterfeit goods in Los Angeles County ranges from 1.5 percent to 26.8 percent. The high end of the range using method #2 seems unbelievable. The black market in Italy—considered the largest as a share of GPD among advanced industrial economies—is not believed to be anywhere near these levels. We can add further context by considering the losses to the retail industry that are implied by the various estimated ranges of the annual sales of counterfeit goods.

Table 10 shows the losses in the retail sector that would be created by various levels of black market spending. The first line shows the impact of a \$100 million change in revenue in the retail industry: 1,800 direct and indirect jobs, \$62 million in wages, \$3 million in state income taxes, \$2 million in sales taxes, and \$30,000 in lost business tax in the City of Los Angeles. The sales tax column includes both the taxes that went uncollected on black market transactions *and* the taxable spending related to the direct and indirect jobs lost in the retail sector.

Table 10  How Revenue Lost to Counterfeiting  Translates into Lost Jobs, Wages, and Taxes in Los Angeles County  (Millions of Dollars and Number of Jobs)						
			Losses to Co	ounterfeiting		
Retail Sector	Business Revenue	Total Jobs	Total Wages	State Income Taxes	Sales Taxes	L.A. City Business Tax
PER \$100 MILLION IN LOSSES	\$100	1,800	\$62	\$3	\$9	\$0.03
METHOD #3, LOW END	\$1,000	18,000	\$620	\$26	\$95	\$0.34
METHODS #1 & #3, HIGH END	\$5,000	91,000	\$3,102	\$130	\$474	\$1.71
METHOD #2, LOW END	\$8,700	158,000	\$5,397	\$227	\$825	\$2.98
METHOD #2, HIGH END	\$17,400	317,000	\$10,794	\$453	\$1,650	\$5.96

Source: LAEDC

Table 10 can also be interpreted as the economic impact that would be generated by removing the black market and redirecting the spending to the legitimate retail sector. Doing so suggests that the higher estimates of the size of the black market for counterfeit goods in L.A. County are simply too large.

The entire retail sector [described in Appendix D], minus auto dealers and service stations, sustains direct employment of 365,095 jobs; multiplier effects bring total employment to 601,000 jobs.

If the \$8.7 billion to \$17.4 billion estimate based on method #2 (government and business surveys) is correct, then shutting down the black market and re-directing the spending to the legitimate retail sector would add 158,000 to 317,000 total jobs — a completely implausible 26 percent to 53 percent of the existing total jobs today. Even the \$5 billion estimate at the high end of methods #1 (rule of thumb) and #3 (customs seizures) implies a too-high-to-believe 91,000 jobs at stake, or 15 percent of the existing retail sector-related jobs (minus auto dealers and service stations).

Indeed, a \$5 billion black market for pirated goods in Los Angeles County implies 200 million transactions per year – about 550,000 counterfeit exchanges per day assuming an

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<sup>&</sup>lt;sup>21</sup> The City of Los Angeles business tax for retail is \$1.37 per \$1,000; the City of Los Angeles is 25 percent of the retail in the county by employment.

average of \$25 per transaction. [Some of the fake goods – automotive parts and airplane parts in particular – change hands for considerably more, but most of the transactions – CDs and DVDs – are much less.] Put another way, a \$5 billion black market implies an average of about 20 black market purchases annually for every man, woman and child in the county – a figure that seems too high.

Yet another test of reasonableness is provided by a "back of the envelope" estimate.

- There are an estimated 9 million pirated music CDs sold each year in Los Angeles County. These CDs typically change hands for \$5; if we assume the black market price is \$10, the total changing hands is \$90 million.
- Next, assume digital piracy online doubles the size of the market to \$180 million a dubious assumption since illegal exchanges of music online often do not involve money changing hands.
- Now assume that the black market for pirated movies is roughly equal to our inflated estimate of the market for pirated music. This brings the total value of pirated goods to \$360 million.
- Finally, we need to account for all of the other industries which are affected by intellectual property infringement in the county. If the value of everything else were four times the value of pirated music and movies, it would only add up to \$1.4 billion dollars; at ten times the value, \$3.6 billion.

Thus, our back-of-the-envelope check suggests a range of \$1.4 billion to \$3.6 billion. The mid-point of this range is \$2 billion, which squares with the findings of method #3 (customs seizures), our most conservative. Table 11 describes the losses to the L.A. retail sector based on a local black market for pirated goods of \$2 billion.

Table 11 Los Angeles County Black Market Impact on the Retail Sector (Millions of Dollars and Number of Jobs)						
						L.A. City Business Tax
Retail Sector Losses	\$2,000	36,000	\$1,240	\$52	\$190	\$0.68

Source: LAEDC

If this black market were redirected to the legitimate retail sector, it would add 36,000 direct and indirect jobs with \$1.2 billion in wages. The job holders would pay \$52 million in state income taxes. Their taxable spending, plus the taxes that should have been captured on the \$2 billion in illicit transactions would generate \$190 million in sales taxes. Directing the \$2 billion in spending to the retail sector would generate \$680,000 in business taxes for the City of Los Angeles, based on its share of countywide employment in retail.

### APPENDIX A

L.A.P.D. ANTI-COUNTERFEITING STATISTICS

#### Los Angeles Police Department Detective Support and Vice Division Anti-Piracy Unit

LAPD's Anti-Piracy Unit was established in July 2004 with six detectives dedicated to combating piracy violations. (Today the unit consists of 5 detectives and one police officer.) The unit mainly targets the manufacturing and distribution of illegally replicated DVDs and CDs. Since its formation, the unit has made 195 arrests and recovered 875,355 counterfeit items with an estimated street value of \$11.5 million.

Los Angeles Police Department Anti-Piracy Unit				
	2004*	2005	2006	TOTAL
Searches	14	28	17	59
Arrests	33	44	118	195
Value of Goods	\$2,190,245	\$4,452,491	\$4,835,243	\$11,477,979
Number of Goods Recovered 169,829 377,829 327,697 875,355				

<sup>\*</sup>LAPD's Anti-Piracy Unit was established in June 2004

Source: LAPD

# APPENDIX B WHAT COUNTS AS A LOSS?

Quantifying the losses due to sales of counterfeit products is difficult. Consider the case of copied music CDs. For the sake of illustration, let's assume that there are 1,000 fake CDs sold in Los Angeles County each year. The retail price of legitimate CDs averages \$15 each, while the fake CDs sell for an average of \$5 each. Is the loss to the copyright holders the retail price of the CDs (\$15,000), the price of the fakes (\$5,000), or something else entirely? Remember: many or all of the sales would not have taken place at the market price of legitimate goods. The answer is wrapped up in the interaction between consumers and producers of CDs.

One way to think about this issue is to assume the black market for CDs disappears (through better enforcement, regulation, or technological fixes). How would CD buyers react? We place the purchasers of pirated CDs along a continuum based on their reaction to the disappearance of the black market. At one end of the spectrum are the buyers who would exit the market entirely rather than pay the higher price for legitimate CDs. At the other end are the people willing (and able) to spend whatever it takes to purchases the desired quantity of CDs; they would still buy the same 6 CDs for \$90 if the illegal market were to disappear – even though doing so would necessitate spending less on some other purchase(s). In the middle of the spectrum those people who would compromise in some fashion: perhaps replacing their purchase of 6 illegal CDs for \$30 with 2 legitimate ones for the same total cost, or increasing their spending to \$45 and purchasing 3 CDs

What would CD producers gain in these 3 cases? If the black market disappears and all buyers exit, the regained revenue for producers would be zero, as the money spent on illegitimate goods would never have been used to purchase the same goods at the retail price.<sup>22</sup> If everyone replaces the pirated goods with an equal number of legitimate ones, the regained revenue would be the retail value of the goods (\$15,000). In the middle case, some former buyers of fake CDs will purchase a lower number of legal CDs, producing revenue of less than \$15,000.

Producers selling goods also available in the black market are denied the opportunity to sell to the consumers who opt instead for the counterfeit goods. If the black market disappeared, the producers of legitimate goods would have the opportunity to serve the demand represented by the street value of the illegal items. Through a combination of lower prices and product differentiation and marketing, the legitimate producers could capture the \$5,000 in black market demand in our CD example. In markets where consumers are particularly price sensitive, there is the potential to capture more, perhaps much more, than just the dollar value currently exchanged for illegal goods in the black market.<sup>23</sup> This dynamic is visible in the pharmaceutical industry when blockbuster prescription drugs come off patent. Some original manufacturers have retained a large

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<sup>&</sup>lt;sup>22</sup> Consider the market for fake handbags: presumably many of the people willing to pay \$25 for a counterfeit purse would never part with \$500 for the real thing. Producers of the legitimate handbags could still lose sales from status conscious buyers if the presence of numerous cheap imitations lowers the perceived exclusivity of the genuine product.

perceived exclusivity of the genuine product.

23 If consumers are price sensitive (demand is elastic) and the price falls, the quantity of goods sold will rise more than enough to offset the lower price and producers will see their total revenues rise. On the other hand, if consumers are not price sensitive (demand is inelastic), the change in the quantity of goods sold will be more limited, and a drop in price will cause the producers' total revenues to fall.

share of the market by lowering the price as generic versions of the medication become available

Note: the same argument applies even in special cases where the price in the black market is zero. Thanks to powerful computers and high-speed internet connections, making and distributing thousands of copies of copyrighted digital content such as movies, television shows, music, and software is fast, easy and virtually costless. Even if the copies are shared without an exchange of funds, however, such behavior can still create an economic loss by depriving the content creators of revenues. Care needs to be used when estimating the size of the losses, since the combination of low- or no-cost goods and seemingly anonymous transactions will produce a large black market. While all of the illegitimate copies are correctly characterized as stolen goods, the size of the loss must be measured in terms of purchases that would have been made if no illegal substitutes were available.

# APPENDIX C IMPACTS ON THE CITY OF LOS ANGELES

Throughout this report, we have focused on the impact of piracy in Los Angeles County. Our choice of geographic boundaries is informed by two key considerations. First, the various approach we used to estimate the scale of spending on pirated goods in Los Angeles County all began with national and county-level statistics or indicators. Teasing out the appropriate county share of the relevant measures introduces certain unavoidable levels of error and uncertainty. Attempting to parse the data more finely to extract city-level impacts would only magnify the margin of error.

Second, the LAEDC estimated the direct and indirect employment sustained by the atrisk sectors using an in-house model based on the Regional Input-Output Modeling System (RIMS II), which was developed by the US Department of Commerce, Bureau of Economic Analysis. The RIMS II model is specifically designed to measure impacts at the county level.

There is nonetheless substantial interest in the impact of piracy-related losses on the City of Los Angeles. The table indicates employment in at-risk sectors in the City of Los Angeles and Los Angeles County. The share of employment in the City of Los Angeles can be used as a rough guide to the city's share of countywide impacts.

Employment in At-Risk Sectors Los Angeles City and County (2002)				
	LA County	LA City	LA City Share	
Motion Picture	152,879	53,445	35.0%	
Apparel & Accessories	73,599	48,631	66.1%	
Aerospace	12,943	2,244	17.3%	
Pharmaceutical Manufacturers	5,324	2,091	39.3%	
Automotive Parts	8,623	1,495	17.3%	
Software Publishers	5,154	2,681	52.0%	
Dolls, Toys & Games	6,185	1,925	31.1%	
Sporting Goods	4,247	1,327	31.2%	
Total	268,954	113,839	42.3%	

Sources: CA EDD ES-202 series, LAEDC estimates.

Economists commonly use relative employment shares to extrapolate such things as the city's gross domestic product. For instance, the GDP for Los Angeles County in 2005 was \$424.1 billion based on the assumption that personal income from employment in the County is 3.4% of the US total. Since the City of Los Angeles accounted for 38.8 percent of employment in the county in 2004, the City of Los Angeles contribution to GDP is assumed to be \$164.6 billion, or 1.3% of national GDP.

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# APPENDIX D SECTORS IN L.A. COUNTY VULNERABLE TO COUNTERFEITING

In this appendix we profile nine sectors of the Los Angeles County economy whose products are vulnerable to counterfeiting: Motion Pictures; Sound Recording and Related Industries; Apparel, Accessories and Footwear; Doll, Toy & Games; Aerospace Parts & Equipment Manufacturing; Pharmaceutical & Medicine Manufacturing; Motor Vehicle Parts Manufacturing; Software Publishing; and Sporting & Athletic Goods. [We've combined our discussion of the motion picture and sound recording industries, electing to cover the entire entertainment sector as a group.] We also survey the retail sector, which is hurt when spending is diverted to the black market for pirated goods.

We chose to focus on these sectors because each one is a core component of the region's economic base and they are characterized by the widespread presence, globally or in Los Angeles County, of intellectual property theft.

All of our focus sectors employ thousands of workers: the smallest, Sporting & Athletic Goods, employs 4,247 people, while Motion Pictures, Sound Recording and Related Industries (241,000) and Apparel, Accessories and Footwear (73,600) are among the county's largest employers. Annual revenues in each sector are at least \$1.5 billion. Most important, these sectors are part of the regional economic base, in that they are export industries and draw dollars into the local economy. [Note the contrast with construction and retail, two trailing industries that typically circulate dollars within the local economy.]

The rest of this section provides a detailed overview of the at-risk sectors. In addition to basics, such as number of firms, employees, payroll, average wage and aggregate revenue, we also report the total economic output, jobs and wages sustained by firms in each sector. Here we are estimating the additional business revenues and employment created in other Los Angeles-based industries when the firms in each sector make purchases and their employees spend their salaries. This multiplier effect captures the total economic activity sustained by each sector and is critically important when considering the economic consequences of piracy.

When counterfeit goods reduce revenues for firms in the motion picture industry, for example, it hurts the shareholders and the employees. The firms may also spend less money on purchases in L.A. County. The multiplier effect allows us to measure the number of workers in support industries – ranging from grocery stores and restaurants to car dealers and law firms – that depend on the continued spending of firms and employees in each of the at-risk sectors.

#### Motion Pictures, Sound Recording and Related Industries

The entertainment industry is the signature sector of the Los Angeles economy. Indeed, to the rest of the world, Los Angeles *is* Hollywood. The industry includes motion picture production; sound recording; independent artists, writers and performers; radio and television broadcasting; and magnetic and optical recording media. Officially, the industry was comprised of 11,660 establishments in 2005, though this number is widely believed to understate the true number of firms. Government statistics consistently undercount employment in the industry, in part because of difficulty capturing zero-employee businesses (independent contractors).

The LAEDC estimates the industry employed 241,000 people in L.A. County, 202,000 of them in motion picture production. The sector is characterized by high average wages: motion picture production (\$85,020); sound recording (\$83,980); independent artists, writers and performers (\$276,120); radio and television broadcasting (\$92,820); and magnetic and optical recording media (\$45,760). Total annual payroll in the sector was \$14.8 billion in 2005. The 2002 Economic Census did not report the annual industry revenues for Los Angeles, which the LAEDC estimates were about \$29 billion that year.

Motion Pictures, Sound Recording and Related Industries Los Angeles County		
INDUSTRY DATA		
Firms <sup>1</sup>	11,660	
Average Annual Wage <sup>1</sup>	\$92,595	
Revenues <sup>2</sup>	\$29,000,000,000	
Payroll <sup>1</sup>	\$14,784,113,000	
Employment <sup>2</sup>	241,000	
MULTIPLIER EFFECT		
Total Output <sup>3</sup>	\$78,200,000,000	
Total Wages <sup>3</sup>	\$39,300,000,000	
Total Employment <sup>3</sup>	814,000	

Sources: 1. CA EDD-ES202 Report

When the firms in the motion picture, sound recording and related industries make purchases and their employees spend their salaries, they create business revenues and jobs at firms in other Los Angeles-based industries. This multiplier effect boosts the total economic output sustained by the motion picture, sound recording and related industries to an estimated \$78.2 billion. The additional employment brings the industry-supported total in L.A. County to about 814,000 jobs with combined annual wages of \$39.3 billion.

<sup>2.</sup> LAEDC estimate (2002)

<sup>3.</sup> LAEDC estimates based on Bureau of Economic Analysis RIMSII Multipliers

#### Apparel, Accessories and Footwear

The fashion industry in Los Angeles is internationally known and has a significant impact on the local economy. The industry includes at least 4,689 cut-and-sew apparel manufacturers, accessories and other apparel manufacturers, footwear manufacturers, apparel wholesalers and footwear wholesalers, which distribute imported as well as U.S.-made products.

These establishments had total estimated revenues of \$12.3 billion in 2005. Footwear wholesaling accounted for \$2.7 billion of the total; apparel wholesaling, \$1.7 billion; cut and sew apparel manufacturing, \$7.3 billion; accessories manufacturing, \$496 million; and footwear manufacturing, \$87 million. These firms employed 73,599 people at an average salary of \$29,261. The highest average salary was paid in footwear wholesaling (\$58,467); the lowest in footwear manufacturing (\$25,073). The combined payroll for the industry was \$2.2 billion.

Apparel, Accessories & Footwear Los Angeles County		
INDUSTRY DATA		
Firms <sup>1</sup>	4,689	
Average Annual Wage <sup>1</sup>	\$29,261	
Revenues <sup>2</sup>	\$12,330,000,000	
Payroll <sup>1</sup>	\$2,153,590,000	
Employment <sup>1</sup>	73,600	
MULTIPLIER EFFECT		
Total Output <sup>3</sup>	\$25,830,000,000	
Total Wages <sup>3</sup>	\$5,120,000,000	
Total Employment <sup>3</sup>	157,000	

Sources: 1. CA EDD-ES202 Report

LAEDC estimates based on US Census Bureau, 2002 Economic Census
 LAEDC estimates based on Bureau of Economic Analysis RIMSII Multipliers

When firms in the apparel, accessories and footwear manufacturing and wholesaling industries make purchases and their employees spend their salaries, they create business revenues and jobs at firms in other Los Angeles-based industries. This **multiplier effect** boosts the **total economic output** sustained by the apparel, accessories and footwear manufacturing and wholesaling industries to an estimated \$25.8 billion. The additional employment brings the industry-supported total in Los Angeles County to about 157,000 jobs with combined **annual wages** of \$5.1 billion.

#### **Dolls, Toys & Games**

The doll, toy and game industry is comprised of doll, toy and game manufacturers as well as toy and hobby goods wholesalers, which distribute imported and US-made products. The industry was comprised of 280 establishments in 2005, 19 percent of which were manufacturers (53) and 81 percent wholesalers (227). Many of the wholesalers in this sector design products in Los Angeles, outsource the manufacturing to China, and then import the toys for distribution in the U.S. Manufacturing makes them more vulnerable to piracy than firms that are strictly wholesalers.

In 2005, the firms in this sector had estimated revenues of \$5.5 billion. Manufacturers had estimated revenues of about \$2.25 billion (41% of the sector total), while wholesalers had estimated revenues of \$3.25 billion (59%). These firms employed 6,185 people. Toy manufacturers had a surprisingly high average salary of \$123,371. However, this figure includes salaries paid to top management of companies headquartered in L.A. Wholesale employees earned an average salary of \$60,017. Payroll for manufacturers and wholesalers collectively was \$516 million, with manufacturers accounting for 45 percent.

Doll, Toy & Games Los Angeles County		
INDUSTRY DATA		
Firms <sup>1</sup>	280	
Average Annual Wage <sup>1</sup>	\$83,504	
Revenues <sup>2</sup>	\$5,500,000,000	
Payroll <sup>1</sup>	\$516,470,000	
Employment <sup>1</sup>	6,185	
MULTIPLIER EFFECT		
Total Output <sup>3</sup>	\$10,630,000,000	
Total Wages <sup>3</sup>	\$1,120,000,000	
Total Employment <sup>3</sup>	19,000	

Sources: 1. CA EDD-ES202 Report

2. LAEDC estimates based on US Census Bureau, 2002 Economic Census 3. LAEDC estimates based on Bureau of Economic Analysis RIMSII Multipliers

When firms in the doll, toy and game manufacturing and wholesaling industries make purchases and their employees spend their salaries, they create business revenues and jobs at firms in other Los Angeles-based industries. This **multiplier effect** boosts the **total economic output** sustained by the doll, toy and game manufacturing and wholesaling industries to an estimated \$10.6 billion. The additional employment brings the industry-supported total in Los Angeles County to about 19,000 jobs with combined annual wages of \$1.1 billion.

#### **Aerospace Parts and Equipment Manufacturing**

The aerospace industry has been a long-time staple in the Los Angeles County economy initially due to the region's consistent weather and flat desert terrain. Here we focus on the aerospace parts sector, which includes the aircraft engine and engine parts manufacturing sector as well as other aircraft parts and equipment manufacturing. During the Cold War, these industries saw a boom in government contracts. However, there was a sharp decline in revenues after the recession in the early 1990s. Post 9/11, firms in the area are again enjoying a resurgence in government contracts, as well as a surge in orders for commercial jets.

In 2005, the sector's 213 establishments had estimated revenues of \$4.5 billion. A majority of this (\$4 billion) came from the 186 firms in the other aircraft parts and equipment manufacturing industry. Firms from both industries employed 12,943 people at an average salary of \$56,089. Their combined payroll was \$726 million.

Aerospace Parts & Equipment Manufacturing Los Angeles County		
INDUSTRY DATA		
Firms <sup>1</sup>	213	
Average Annual Wage <sup>1</sup>	\$56,089	
Revenues <sup>2</sup>	\$4,470,000,000	
Payroll <sup>1</sup>	\$726,170,000	
Employment <sup>1</sup>	12,943	
MULTIPLIER EFFECT		
Total Output <sup>3</sup>	\$9,130,000,000	
Total Wages <sup>3</sup>	\$1,560,000,000	
Total Employment <sup>3</sup>	36,000	

Sources: 1. CA EDD-ES202 Report

2. LAEDC estimates based on US Census Bureau, 2002 Economic Census
3. LAEDC estimates based on Bureau of Economic Analysis RIMSII Multipliers

When firms in the aerospace parts and equipment manufacturing industries make purchases and their employees spend their salaries, they create business revenues and jobs at firms in other Los Angeles-based industries. This multiplier effect boosts the total economic output sustained by the aerospace parts and equipment manufacturing industries to an estimated \$9.1 billion. The additional employment brings the industry-supported total in Los Angeles County to about 36,000 jobs with combined annual wages of close to \$1.6 billion.

#### Pharmaceutical & Medicine Manufacturing

The pharmaceutical industry is poised for growth as the American population grows older. Although the number of firms in the county is relatively small (85), pharmaceutical and medicine manufacturers employ an average of 26.7 people per firm for a total of 5,324 workers. These employees had an average salary of \$49,140 and had a combined payroll of \$261.7 million. Strong demand for this industry's product helps produce high revenues. In 2005, the 85 establishments had estimated revenues of \$2.6 billion.

Pharmaceutical & Medicine Manufacturing Los Angeles County		
INDUSTRY DATA		
Firms <sup>1</sup>	85	
Average Annual Wage <sup>1</sup>	\$49,140	
Revenues <sup>2</sup>	\$2,633,450,000	
Payroll <sup>1</sup>	\$261,670,000	
Employment <sup>1</sup>	5,324	
MULTIPLIER EFFECT		
Total Output <sup>3</sup>	\$4,870,000,000	
Total Wages <sup>3</sup>	\$766,000,000	
Total Employment <sup>3</sup>	26,000	

Sources: 1. CA EDD-ES202 Report

2. LAEDC estimates based on US Census Bureau, 2002 Economic Census

When firms in the pharmaceutical and medicine manufacturing industry make purchases and their employees spend their salaries, they create business revenues and jobs at firms in other Los Angeles-based industries. This **multiplier effect** boosts the **total economic output** sustained by the pharmaceutical and medicine manufacturing industry to an estimated \$4.9 billion. The additional employment brings the industry-supported total in Los Angeles County to about 26,000 jobs with combined annual wages of \$766 million.

<sup>3.</sup> LAEDC estimates based on Bureau of Economic Analysis RIMSII Multipliers

#### **Motor Vehicle Parts Manufacturing**

The car culture of Southern California is widely recognized in the auto industry and highly visible to the average citizen of Los Angeles County. Once there were six car assembly plants in Los Angeles with supplier that made tires, glass and other components. This has gone away. Today, most of the U.S. headquarters for Asian-owned car companies are located in the Los Angeles region.

One industry which has reaped the benefits of this dynamic and sustained market is the motor vehicle parts manufacturing industry. Production of everything from engines to brakes and tailpipes for vehicles falls into this category. This is specialty equipment that enhances performances and/or appearance, with some established brands. In 2005, the industry's 222 establishments had estimated revenues of \$2.3 billion. These firms employed 8,653 people at an average salary of \$38,584. Their combined payroll was \$333 million

Motor Vehicle Parts Manufacturing Los Angeles County		
INDUSTRY DATA		
Firms <sup>1</sup>	222	
Average Annual Wage <sup>1</sup>	\$38,584	
Revenues <sup>2</sup>	\$2,326,130,000	
Payroll <sup>1</sup>	\$332,650,000	
Employment <sup>1</sup>	8,623	
MULTIPLIER EFFECT		
Total Output <sup>3</sup>	\$4,550,000,000	
Total Wages <sup>3</sup>	\$868,000,000	
Total Employment <sup>3</sup>	24,000	

Sources: 1. CA EDD-ES202 Report

LAEDC estimates based on US Census Bureau, 2002 Economic Census
 LAEDC estimates based on Bureau of Economic Analysis RIMSII Multipliers

When firms in the motor vehicle parts manufacturing industry make purchases and their employees spend their salaries, they create business revenues and jobs at firms in other Los Angeles-based industries. This multiplier effect boosts the total economic output sustained by the motor vehicle parts manufacturing industry to an estimated \$4.5 billion. The additional employment brings the industry-supported total in Los Angeles County to about 24,000 jobs with combined annual wages of \$868 million.

#### **Software Publishing**

The software publishing industry in Los Angeles County comprises establishments primarily engaged in computer software publishing or publishing and reproduction. Establishments in this industry carry out operations necessary for producing and distributing computer software, such as designing, providing documentation, assisting in installation, and providing support services to software purchasers. These establishments may design, develop, and publish or publish only. Los Angeles County's computer game developers are a part of this sector.

In 2005, the industry's 193 establishments had estimated revenues of \$2.3 billion. These firms had an average of 26.7 people per establishment and employed a total of 5,154 workers. On average, these employees enjoyed a generous annual salary of \$87,412, leading to a combined payroll for the industry of \$450.3 million.

Software Publishers Los Angeles County		
INDUSTRY DATA		
Firms <sup>1</sup>	193	
Average Annual Wage <sup>1</sup>	\$87,412	
Revenues <sup>2</sup>	\$2,274,949,000	
Payroll <sup>1</sup>	\$450,348,000	
Employment <sup>1</sup>	5,154	
MULTIPLIER EFFECT		
Total Output <sup>3</sup>	\$4,370,000,000	
Total Wages <sup>3</sup>	\$782,000,000	
Total Employment <sup>3</sup>	16,000	

Sources: 1. CA EDD-ES202 Report

- 2. LAEDC estimates based on US Census Bureau, 2002 Economic Census
- 3. LAEDC estimates based on Bureau of Economic Analysis RIMSII Multipliers

When the firms in the software publishing industry make purchases and their employees spend their salaries, they create business revenues and jobs at firms in other Los Angeles-based industries. This **multiplier effect** boosts the **total economic output** sustained by the software publishing industry to an estimated \$4.4 billion. The additional employment brings the industry-supported total in Los Angeles County to about 16,000 jobs with combined annual wages of \$782 million.

#### **Sporting & Athletic Goods**

The sporting and athletic goods sector in Los Angeles County is not widely recognized as a leading economic driver in the region, despite making a significant impact on the total economic output of the county. The sector is made up of sporting and athletic goods manufacturing industry as well as the sporting goods merchant wholesaling industry, which distributes imported as well as US-made products.

In 2005, the sector's 317 establishments had estimated revenues of \$1.5 billion. Revenues for wholesalers (\$1.3 billion) were over five times as much as manufacturers (\$234 million). Although manufacturers made up only 21% of the establishments, they employed 40% of the total workers for the sector. The wholesalers are usually small firms with an average 10.3 employees per firm, smaller than 24.7 for manufacturers. Collectively, these firms employed 4,247 people at an average salary of \$41,713. Their combined payroll was \$177 million.

Sporting & Athletic Goods Los Angeles County		
INDUSTRY DATA		
Firms <sup>1</sup>	317	
Average Annual Wage <sup>1</sup>	\$41,713	
Revenues <sup>2</sup>	\$1,489,420,000	
Payroll <sup>1</sup>	\$177,154,984	
Employment <sup>1</sup>	4,247	
MULTIPLIER EFFECT		
Total Output <sup>3</sup>	\$2,890,000,000	
Total Wages <sup>3</sup>	\$394,000,000	
Total Employment <sup>3</sup>	11,000	

Sources: 1. CA EDD-ES202 Report

When firms in the sporting and athletic goods manufacturing and wholesaling industries make purchases and their employees spend their salaries, they create business revenues and jobs at firms in other Los Angeles-based industries. This **multiplier effect** boosts the **total economic output** sustained by the sporting and athletic goods manufacturing and wholesaling industries to an estimated \$2.9 billion. The additional employment brings the industry-supported total in Los Angeles County to about 11,000 jobs with combined annual wages of \$394 million.

<sup>2.</sup> LAEDC estimates based on US Census Bureau, 2002 Economic Census

<sup>3.</sup> LAEDC estimates based on Bureau of Economic Analysis RIMSII
Multipliers

#### Retail

The retail industry in Los Angeles County, excluding auto dealers and service stations, comprised 24,592 establishments with estimated revenues of \$71.7 billion in 2005. These firms had an average of 14.8 people per establishment and employed a total of 365,095 workers. On average, these employees had an annual salary of \$26,601 leading to a combined payroll for the industry of \$9.7 billion

Retail Industry* Los Angeles County	
INDUSTRY DATA	
Firms <sup>1</sup>	24,592
Average Annual Wage <sup>1</sup>	\$26,601
Revenues <sup>2</sup>	\$71,653,000,000
Payroll <sup>1</sup>	\$9,711,882,201
Employment <sup>1</sup>	365,095
MULTIPLIER EFFECT	1
Total Output <sup>3</sup>	\$146,600,000,000
Total Wages <sup>3</sup>	\$20,500,000,000
Total Employment <sup>3</sup>	601,000

<sup>\*</sup>Excluding auto dealers and gas stations.

Sources: 1. CA EDD-ES202 Report

When the firms in the retail industry make purchases and their employees spend their salaries, they create business revenues and jobs at firms in other Los Angeles-based industries. This multiplier effect boosts the total economic output sustained by the retail industry to an estimated \$146.6 billion. The additional employment brings the industry-supported total in Los Angeles County to about 601,000 jobs with combined annual wages of \$20.5 billion.

<sup>2.</sup> LAEDC estimate based on 2002 Business Census

<sup>3.</sup> LAEDC estimates based on Bureau of Economic Analysis RIMSII Multipliers